

## SSOW – Transport, storage and safe use of oxygen acetylene equipment.

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<b>Written by:</b>	Vic Hargreaves (Regional SHEQ Advisor).
<b>Scope of Activity:</b>	This safe system of work covers the transport, storage, and safe use of oxygen acetylene equipment.
<b>Applicable Risk Assessment:</b>	RA 005 – Transport, storage, and safe use of oxygen acetylene equipment.
<b>Hazards Expected:</b>	As identified in the applicable risk assessment.
<b>Mandatory PPE:</b>	Overalls Safety boots Heavy duty heat retardant gauntlet gloves Leather heat retardant apron Tight fitting goggles or full-face visor (EN 166, EN 169 and EN 175 - mechanical strength as a minimum, resistant to molten metals and hot solids, with tinted filter suitable for oxygen acetylene welding) Ear defenders
<b>Additional PPE (as required):</b>	Heat retardant hat (where there is risk of sparks/ molten metal falling from above) Bump cap (if working in area/ position with poor head clearance)
<b>Resources:</b>	Competent engineer (s) Oxygen Acetylene Set Barrier tape Nozzle pressure data

### Manning:

Field service engineer(s) reporting to an Engineering Manager who is responsible for providing information, instruction, supervision and ensuring that the engineers are suitably trained. In turn the Engineering Manager reports to the Senior / Regional Business Manager.

Engineers will take full responsibility for:

- Customer contact, authority to carry out the task, signing and implementing customer work permits and following customer site rules;
- Establishing with the customer and working in a safe area and environment;
- Ensuring that a risk assessment is in place, is suitable and sufficiently covers all hazards;
- Familiarising themselves with the equipment operator and maintenance manuals;
- Ensuring all maintenance and repairs are completed in accordance with the manufacturer's manual.

### Transport of Oxygen Acetylene:

- Ensure vehicle being used is suitable for transporting oxygen acetylene equipment
  - Where possible transport gas cylinders in an open backed vehicle;
  - Vehicles transporting oxygen acetylene must have suitable ventilation (two low level vents and one roof mounted rotator vent);
  - Vehicles transporting oxygen acetylene must be equipped with a fire extinguisher (minimum 2KG dry powder);

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- Oxygen acetylene must never be transported in the cab of the vehicle under any circumstances. The cab must be separate from the rear storage area;
- Ensure all other items in rear storage area of vehicle are appropriately secured to prevent any movement that could impact the oxygen acetylene equipment;
- Cylinders must be fitted to a trolley, stored upright and trolley suitably secured within the vehicle using ratchet straps to prevent any movement;
- Pressure gauges and regulators must be removed when in transit to prevent damage;
- Check on cylinders after any harsh braking or following an incident;
- Ensure all cylinder valves are closed and remain vigilant for any sign of leaks;
- Ensure service vehicle is maintained in line with manufacturer's recommendations;
- Never carry any items which could cause a source of ignition. Ensure batteries being transported are suitably secured with plastic caps covering posts;
- Always allow oxygen acetylene sets and related components to cool before returning them to service vehicle.

### **Safe Working Method:**

- Any person using oxygen acetylene must have completed a Forkway approved oxygen acetylene training course;
- Upon arrival on site, you must sign in where applicable and make contact with the designated site contact. You must ensure you have completed any necessary inductions and any permits to work or other documentation required by customer have been completed;
- Agree with the site contact a designated safe working area in which to carry out all operation
  - Avoid work in areas with high volumes of pedestrian or vehicle movements;
  - Where this cannot be avoided, a cordon should be made around the working area to keep persons and vehicles a safe distance away;
  - In any case, ensure hoses are in a position where they will not be crushed by pedestrians or vehicles.
  - Check with customer contact to confirm work area is not in a flammable or explosive atmosphere;
  - Check the area with customer contact for any materials which may be flammable or combustible. Remove these before starting or move to an alternative area;
  - Ensure the work area has good levels of ventilation;
- Discuss the use of the oxygen acetylene equipment with the customer contact and ensure they inform their employees to stay clear of the work area throughout the task;
- Check the object/ component you are going to be heating
  - Ensure it is free from any chemicals/ residues;
  - Ensure it is not coated with lead or chromate paints or is galvanised or cadmium plated;
  - Assess the risk of combustible items or components nearby on equipment under repair catching fire
    - Ideally remove object/ component from equipment under repair;
    - If the object/ component cannot be removed, remove combustible components nearby;

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- If neither is achievable make use of fire-retardant blankets and use a second person equipped with a fire extinguisher to fire watch;
  - Assess whether there is a likelihood of the object you are heating or adjoining objects suddenly moving or falling
    - Ensure objects that could suddenly move, or fall are suitably supported;
    - Ensure the area is cordoned off and no persons remain below or in the vicinity nearby;
  - Ensure it is not in close proximity to or part of a closed tank, drum, or vessel. You must not heat or cut these under any circumstance;
  - Ensure it is not in close proximity to a pneumatic tyre. Remove wheel or deflate tyre if this cannot be avoided;
- Complete pre use checks on the oxygen acetylene equipment following appropriate pre use check sheet
    - Ensure torch is fitted with the correct type of nozzle for the task in hand;
    - Ensure CP07 checks have been completed within the last 12 months;
    - If defects are found, take equipment out of service, and affix a do not use tag. Inform line manager;
  - Complete pre-use checks on all PPE and once satisfied fit and adjust;
    - Ensure items are free from defects;
    - Ensure all PPE is clean and free from flammable contaminants or residues
    - Ensure all items are tight fitting;
    - Ensure items are CE marked and to the correct standards;
  - Ensure oxygen acetylene cylinders are secured to a suitable trolley and transport them to the work area
    - Position the oxygen acetylene equipment away from pedestrians or vehicles;
  - Unravel hoses and suitably position them
    - Where they will not be crushed by pedestrians or vehicles or cause a trip hazard;
    - Where they will not be struck by flame, sparks or molten metal;
    - Away from sharp edges and abrasive surfaces;
  - Light up the oxygen acetylene equipment using the following procedure:
    - Check that the outlets of adjustable pressure regulators are closed, i.e. that the pressure-adjusting screw of the regulator is in the fully unwound (anticlockwise) position;
    - Check that the blowpipe valves are closed;
    - Slowly open the cylinder valves (or gas supply point isolation valves) to avoid sudden pressurisation of any equipment;
    - Adjust pressure regulators to the correct outlet pressures for the equipment and process;
    - Open the oxygen valve at the blowpipe and allow the flow of oxygen to purge air out of oxygen hose and equipment. If necessary, reset the pressure regulator to ensure correct working oxygen pressure.
    - Close the oxygen valve at the blowpipe;
    - Open the fuel gas valve at the blowpipe and allow the gas flow to purge air or oxygen from the fuel gas hose and equipment. If necessary, reset the pressure regulator to ensure correct working fuel gas pressure;
    - Light the fuel gas immediately with a spark lighter.

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- Open the oxygen valve at the blowpipe and adjust it and the fuel gas valve to give the correct flame setting.
- Complete the task in line with training;
- If a backfire occurs, take the following steps:
  - Shut off the torch valves, oxygen first and then the fuel gas (usually coloured red);
  - Shut off the oxygen and fuel gas cylinder valves;
  - Cool the blowpipe with water if necessary;
  - Check the equipment for damage or faults, particularly the nozzle.
- If flashback occurs, take the following steps:
  - If it is safe to do so, close the cylinder valves on both fuel gas and oxygen;
  - Check for damage to the torch, hoses, regulators, flashback arresters and other components;
  - Disposable flashback arrestors must be disposed of following a flashback;
  - Re-useable flashback arrestors must be checked and re-set following manufacturer's recommended procedures;
- Once you are finished your task, shut down the oxygen acetylene equipment using the following procedure:
  - Close the fuel gas valve at the blowpipe;
  - Immediately close the oxygen valve at the blowpipe;
  - Close the cylinder valves or gas supply point isolation valves for both oxygen and fuel gas;
  - Close the outlets of adjustable pressure regulators by winding out the pressure-adjusting screws;
  - Open both blowpipe valves to vent the pressure in the equipment;
  - Close the blowpipe valves;
- Monitor the area that was heated and immediate vicinity for at least half an hour before leaving site and remain vigilant for signs of smoke or smouldering during this time. Consider using water to douse and cool areas that have been heated;
- If oxygen acetylene bottles are involved in a fire or located where a fire has broken out, evacuate the area and contact the emergency services immediately.

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